

REMARKS

The non-final Office Action of February 10, 2003 has been received and carefully reviewed. By the above actions, claims 25, 27, 30, 32, 37, 40-42, 47, 51, 53, 55-57, 60, 61, 66 and 71 have been amended. Claims 1-82 are currently pending and claims 1-24 have been withdrawn from consideration as being drawn to a non-elected invention. In view of these actions and the following remarks, further consideration of this application is now requested.

With regard to the Examiner's objection to the drawing, citing MPEP Chapter 608.02(g), the Applicants have filed on an even date herewith a Letter Submitting Formal Drawings which includes a new formal drawing Figure 2 properly marked as "Prior Art." Withdrawal of the Examiner's objection to the drawings is therefore respectfully requested.

With regard to the Examiner's formality rejection, under § 112 (first paragraph), of claims 40 and 45, asserting that the specification as originally filed does not describe plasma treating the surface of an interlayer insulating film, the Applicants would point out to the Examiner that original claims 40 and 45 form part of the original disclosure in the specification, as noted in MPEP Chapter 2163.06, and, as such, instead of a setting forth a rejection under § 112 (first paragraph) the Examiner should have set forth a requirement to add the subject matter of claims 40 and 45 to the remainder of the specification. However, in the instant situation, such an addition is not necessary since the original specification, at page 27, lines 17-22, clearly and succinctly teaches a "plasma treatment is performed on the second interlayer film to modify the surface of the second interlayer insulating film (935 or 3926)."

With regard to the Examiner's formality rejection, under § 112 (second paragraph), of claims 27, 32, 37, 41, 42, 66 and 71, the attached amendments to the claims are believed sufficient to overcome each of the deficiencies noted by the Examiner. In light of the instant amendment to claims 27, 32, 37, 41, 42, 66 and 71, the rejection, under § 112 (second paragraph), is believed to no longer be appropriate and should now be withdrawn.

Turning to the prior art rejections of:

Claims 25-28, 30-33, 35-38 and 40-43, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Applicants' Admitted Prior Art (AAPA) combined with the teachings of Yamada ('179), Inoue et al ('206), So et al ('905) and Garcia et al ('369),

Claims 29, 34, 39 and 44, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Applicants' Admitted Prior Art (AAPA) combined with the teachings of Yamada ('179), Inoue et al ('206), So et al ('905), Garcia et al ('369) and further Farber et al ('684),

Claims 45-53, 56-58, 61, 62, 64, 65, 67, 74-80 and 82, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Applicants' Admitted Prior Art (AAPA) combined with the teachings of Yamada ('179), Inoue et al ('206), So et al ('905), Garcia et al ('369), Farber et al ('684), Satoh et al ('334) and optionally Sakata et al ('584), and

Claims 54, 55, 59, 60, 63, 66, 68-73, 79 and 81, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Applicants' Admitted Prior Art (AAPA) combined with the teachings of Yamada ('179), Inoue et al ('206), So et al ('905), Garcia et al ('369), Farber et al ('684), Satoh et al ('334) and Montgomery et al ('995).

the Applicants respectfully traverse these rejections.

Specifically, the AAPA of pages 2-4 does not teach or suggest any of the particularly claimed steps of:

"...forming a first insulating film on the interlayer insulating film;

forming a wiring line on the first insulating film;"

"forming an anode electrically connected to the thin film transistor through the wiring line, on the first insulating film;..."

“forming a resin insulating film that covers the anode and the wiring line;...”

“etching the resin insulating film to form a bank;”

“conducting...heat treatment to the bank,”

“wiping the anode;...”

recited in independent claims 25, 30, 35, 40. That is, the AAPA teaches forming an interlayer insulating film 203, forming a wiring line 204 which connects the anode 205 to the TFT 202 through the interlayer insulating film 203 and forming a bank 208 of an organic resin to cover the edges of the anode. Thereafter, an organic compound 206 is formed on the anode 205, and then a cathode 207 is formed on the organic compound 206. There is no teaching of forming a first insulating film on the interlayer insulating film 203 followed by forming an resin insulating film which is to become the bank. Only a bank 208 of an organic resin is taught to be formed in the interlayer insulating film 203.

In contrast to the AAPA and the claimed invention, in Inoue et al a plasma treatment is conducted on an interlayer insulating film 10 including a contact hole 11 to remove residue 12 from the contact hole, and thereafter, a pixel electrode 13 is formed on the interlayer insulating film 10. On the other hand, in the present invention, the heat treatment and plasma treatment is conducted on a bank formed over an anode (See for example, Figure 8). Since the interlayer insulating film 10 of Inoue et al. does not correspond to the bank (See Figure 5B, element 945) of the presently claimed invention, Inoue et al do not disclose the heat or plasma treatment of the bank.

Further, the claimed plasma treatment to the bank has an advantage that release of moisture and gas from inside is prevented and degradation of a light emitting element is prevented. Such the advantage is not disclosed in Inoue et al (which only teaches plasma treatment to remove residues) and in of no further use in rendering the claimed invention obvious than the previously cited JP 11-271753 and Asia Display/IDW '01, pp.1399-1402 reference which also generally teach plasma treatment.

In Garcia et al, although scrubbing a surface of a semiconductor wafer is widely disclosed, wiping an anode in a light emitting device is not disclosed. Although, it is noted that the prior art, as in previously cited JP 9-245965, teaches wiping of wafer surfaces. However, the claimed wiping the anode in the light emitting device has an advantage that irregularities of a surface of the anode can be leveled, dust on the surface of the anode can be removed, and that degradation of a light emitting element is prevented. Such advantage is not disclosed or appreciated in Garcia et al. For these reasons the combination of AAPA with Yamada ('179), Inoue et al ('206), So et al ('905) and Garcia et al ('369) does not teach or suggest each feature of the claimed invention and further, there is no motivation to combine the teachings of Inoue et al or Garcia et al with those of the AAPA for the reasons mentioned above. Finally, a review of the Yamada et al and So et al reveals that neither reference cures the deficiencies of Inoue et al and Garcia et al. Therefore, the rejection of claims 25-28, 30-33, 35-38 and 40-43 has been set forth in error and must be withdrawn.

With regard to the rejection of claims 29, 34, 39, 44-53, 56-58, 61, 62, 64, 65, 67, 74-80 and 82, under § 103(a), as being unpatentable over AAPA in combination with Yamada ('179), Inoue et al ('206), So et al ('905) and Garcia et al ('369) further in view of Farber et al ('684) alone, and in further view Satoh et al ('334) and in view of Sakata et al ('584), although the Examiner contends that the AAPA recognizes the problem of transferring semiconductor wafer from one clean room to another clean room, such the contention is not appropriate. The inventors of the subject application recognized such a problem for the first time in the present invention, that is, when a TFT substrate is transferred from one clean room to another clean room, there is a problem that the TFT substrate may be contaminated by dusts and damaged by electrostatic discharge.

In Farber et al, although scrubbing a surface of a semiconductor wafer is widely disclosed, wiping an anode in a light emitting device is not disclosed. Further, both Inoue et al and Garcia et al, as currently applied, suffer from the same deficiencies outlined above for the rejection of claims 25-28, 30-33, 35-38 and 40-43. In view of above reasons, we believe that this rejection is not appropriate. Since the AAPA does not appreciate the problem a TFT substrate encounters when the TFT substrate is

transferred from one clean room to another clean room, i.e., the TFT substrate may be contaminated by dusts and damaged by electrostatic discharge, there is no motivation to employ the teachings of Farber et al in the process of the AAPA. Therefore, the rejection of claims 45-53, 56-58, 61, 62, 64, 65, 67, 74-80 and 82 has also been set forth in error and must be withdrawn.


With regard to the rejection of claims 54, 55, 59, 60, 63, 66, 68, 69-73, 79 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in combination with Yamada ('179), Inoue et al ('206), So et al ('905) and Garcia et al ('369) further in view of Farber et al ('684), and further in view of Satoh et al ('334), and further in view of Montgomery et al ('995), although Montgomery et al disclose a charge dissipation material, the patentees do not disclose a film for preventing the TFT substrate from a contamination and electrostatic discharge damage in a light emitting device. Further, each of Inoue et al, Farber et al and Garcia et al, as currently applied, suffer from the same deficiencies outlined above for the previous § 103 rejections. Therefore, the rejection of claims 54, 55, 59, 60, 63, 66, 68, 69-73, 79 and 81 has also been set forth in error and must be withdrawn.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

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Lastly, it is noted that a separate Extension of Time Petition (one month) accompanies this response along with a check in payment of the requisite extension of time fee. However, should that petition become separated from this Amendment, then this Amendment should be construed as containing such a petition. Likewise, any overage or shortage in the required payment should be applied to Deposit Account No. 19-2380 (740756-2435).

Respectfully submitted,



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